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25X1 [redacted]

IDEA-0045-70
Copy 3 of 4

12 March 1970

MEMORANDUM FOR: Deputy for Research and Development, OSA

SUBJECT : Career Development Course # 4

25X1 REFERENCE : [redacted] dated 6 March 1970, Same Subject

As requested in referenced Memorandum, please find attached IDEA-0044-70 dated 12 March 1970 with names of each briefer and list of Required Aids from Aeromedical Staff, OSA, for Career Development Course # 4.

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Chief, Aeromedical Staff
Office of Special Activities

Attachment
As stated above

25X1 AMS/OSA/[redacted]
Distribution
1 - Addee
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4 - RB/OSA

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IDEA-0044-70
Copy 2 of 4

12 March 1970

LESSON TITLE : Aeromedical Programs

DIVISION : Aeromedical Staff/OSA

25X1 INSTRUCTORS :

DATE/TIME/PLACE : 25 March 1970/1330-1630/D/SA Conference Room

PART II - OVERVIEW

1. LESSON OBJECTIVE: The objective of this lesson is for each student to become familiar with programs of the Aeromedical Staff/OSA. Specifically, the student will become familiar with the general physiological requirements for life-support equipment, the life-support system developed for and used in PROJECT IDEALIST, and the Survival, Evasion, Resistance and Escape (SERE) Training Program for project pilots.

2. INSTRUCTIONAL AIDS: Vu-Graph Slides and overhead projector, 35 mm Slides and Projector, 16 mm Movie and Projector.

3. TIME REQUIRED: 2 hours 45 min

4. PLAN OF PRESENTATION: The instructor will introduce the lesson by describing the overall organization and function of the Aeromedical Staff. Life-Support Programs will be discussed in detail by describing the physiological requirements for

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life-support equipment, i. e., total barometric pressures, altered partial pressures, thermal balance, and protection during emergency ejections. In order to correlate physiological requirements with equipment in use, the life-support system as used in the U-2R will be discussed in detail. Finally, an overview of the AMS/OSA SERE (Survival, Evasion, Resistance, and Escape) Training Program and related specialized equipment will be presented.

PART II - TEACHING GUIDE

A. INTRODUCTION

1. Aeromedical Staff: Organization and Function
2. Life-Support Program Overview:

Equipment types and categories

a. Aircraft Systems
b. Aircrew Systems
c. Training

B. Physiological Requirements for Life-Support Equipment

1. Total Barometric Pressure
   a. Mechanical effects of Pressure Change
      (1) Areas affected
      (2) Prevention/Protection
2. Altered Partial Pressures

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a. Decompression sickness

(1) Areas affected

(2) Protection/Prevention

b. Boiling of Body Fluids

(1) Areas affected

(2) Protection

c. Hypoxia

(1) Cause and Effects

(2) Protection

3. Thermal Balance

a. Heat Loads

b. Heat Loss

c. Protection

(1) From Heat

(2) From Cold

4. Escape Provisions

a. Hazards

(1) Decision

(2) Decompression

(3) Separation

(4) Windblast

(5) Deceleration

(6) Spin

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(7) Hypoxia

(8) Frostbite

(9) Parachute Opening Shock

(10) Parachute Landing and Canopy Release

(11) Survival

C. A DESCRIPTION OF U-2R LIFE-SUPPORT EQUIPMENT

1. Pressurization/Air Conditioning/Ventilation System

2. Oxygen System

3. Ejection System

4. Pilots Protective Assembly

5. Emergency Oxygen System

6. Survival Equipment

D. A DESCRIPTION OF AMS/OSA SERE TRAINING PROGRAM

1. Purpose of SERE Training

2. SERE Operational Qualification Training

3. SERE Annual Training Requirement

4. Types of training, areas, and specialized techniques/equipment

a. Academic Training

b. Local Area Training

c. Field or Special Area Training

5. Evaluation of Survival Equipment/Techniques

6. Resistance to Interrogation Training.

Career Dev Council

25 March 1970

AERO MEDICAL STAFF

OFFICE OF SPECIAL ACTIVITIES

I. MISSION STATEMENT

AMS/OSA is responsible to the Director, Special Activities for the aeromedical aspects of OSA, DD/S&T operations, training, research and development. The function of the Aero Medical Staff is to insure that the operational aircrew member is properly evaluated and selected; that his health, both physical and mental, is maintained at peak effectiveness; and that his personal protective, survival, escape, and evasion equipment and training are up-to-date and satisfactory so that the aircrew member can participate effectively in attaining OSA mission objectives.

II. STAFF RESPONSIBILITIES

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[redacted]

A. CHIEF, AERO MEDICAL STAFF

C/AMS/OSA is responsible to D/SA for all aeromedical aspects of OSA, DD/S&T operations, training, research and development. The C/AMS/OSA is solely responsible for the Aero Medical Support functions of AMS activities (i.e., AS/AMS/OSA).

Duties of Chief, AMS/OSA 25X1

1. Coordinate with and be knowledgeable of activities [redacted] of Escape and Evasion, drown proofing and para-sail training who form Life Support Division of AMS.

2. Coordinate with Agency Office of Medical Services (OMS) and Surgeon General's Office, USAF, in selection and screening of Air Force personnel including pilots, and all other A.F. integrees.

3. Monitor selection of Agency personnel assigned to OSA.

4. Coordinate with Assessment and Evaluation Psychological Staff in selection and evaluation and Resistence to Interrogation Training (RTI).

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5. Supervise activities of [redacted] Flight Surgeons, medical technicians, E&E training Sergeant and Personal Equipment (PE) section at Detachment G. Also have similar relationship to [redacted] 25X1

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6. Coordinate with and support deployments from Detachment G. 25X1

[redacted]

8. Have Liaison with Lovelace Clinic Albuquerque, New Mexico where Special Project pilots receive annual physical examination.

9. Relate to OSA Aerospace Medical consultant, DDS&T - ORD Aeromedical personnel, USAF School of Aerospace medicine, Lockheed Medical Dept, etc.

B. DEPUTY CHIEF, AEROMEDICAL STAFF

The DC/AMS/OSA is responsible, in the absence of the C/AMS/OSA, to the D/SA for all aeromedical aspects of OSA, DD/S&T operations, training, research and development. In addition, the DC/AMS/OSA is specifically responsible for the administrative aspects of AMS/OSA activities. The DC/AMS/OSA also directs the Life Support functions of AMS activities (i.e., LS/AMS/OSA).

C. LIFE SUPPORT (PROTECTIVE EQUIPMENT AND TRAINING)

The Life Support function of AMS/OSA insures that operational aircrews have the most advanced and applicable life support equipment and training required for the aircrew to fulfill the OSA mission. Life Support equipment includes: pressure suits; survival, escape, evasion, and rescue equipment; ejection seats and parachutes; and oxygen equipment. LS/AMS/OSA insures that such equipment: is properly developed, tested and evaluated; is properly utilized; is adequately maintained, overhauled, modified as required, and replaced when necessary. LS/AMS/OSA also insures that operational aircrews receive adequate training in the use of their life support equipment, and procedures and techniques for protection, survival, evasion, resistance and escape. The Life Support function is staffed by the following personnel with duties as indicated:

1. Aerospace Physiologist/Life Support Officer

a. Initiates and monitors research and development programs in the life sciences area as applicable to high performance manned aircraft.

b. Performs necessary research and development of life support equipment, ejection seats, parachuts, pressure suits and oxygen equipment.

c. Contracts for the development of personal equipment required to fulfill the mission, and monitors and closely coordinates industrial contractor efforts in research and development of life support equipment.

d. Directs and monitors field level life support programs with respect to:

(1) Procedures employed for supporting aircrews and their personal protective and survival equipment.

(2) Equipment utilization, test, and maintenance.

(3) Providing specifications for the acquisition of new, improved, modified or replacement items.

(4) Training of aircrews in aviation physiology, personal equipment and survival.

e. Performs frequent visits to field level life support sections to coordinate, inspect and assess their activities.

f. Participates in the indoctrination and training programs of the field level life support sections.

g. Participates in accident investigations as required.

h. Supplements field life support personnel during deployments if required.

i. Monitors activities of the Air Force and other services in the field of personal equipment, ejection seats, survival equipment, and parachutes.

j. Personally participates in environmental testing of experimental life support equipment.

k. Serves as contract technical monitor for all life support contracts, coordinating closely with CMD/Compt/OSA, D/M/OSA and Depot.

l. Writes technical and status reports on all the above.

m. Participates regularly in altitude chamber flights as inside observer to maintain proficiency.

2. Evasion and Survival Superintendent

a. Plans and organizes survival activities: Develops and improves procedures for instruction of aircrews in survival techniques.

b. Directs survival activities: Monitors lectures, demonstrations, and briefings on survival, evasion, resistance, and escape techniques to determine quality of instruction and effectiveness of training aids.

c. Inspects and evaluates survival and rescue programs to determine compliance with directives and policies. Examines rescue and survival equipment to determine adequacy and readiness for use in environments such as arctic, desert, mountain, tropical and water areas. Evaluates rescue/recovery techniques employed by rescue/recovery personnel.

d. Tests and evaluates parachutes and aerial recovery equipment techniques.

e. Conducts liaison with military and Agency personnel concerning survival, evasion, escape and recovery.

f. Designs and develops survival equipment and techniques in conjunction with appropriate Agency organization.

g. Coordinates all plans for covert activity with counterintelligence staff.

h. Parachutes frequently and regularly to maintain proficiency.

Responsibility of Medical

1. Selection - Project Pilots -

Because of singular mission, every effort is made to select best from every aspect. Physical requirements, motivation, dedication, maturity, emotional stability, intelligence, adaptability, coordination, ability to get along with others, handle alcohol, etc.

They receive astronaut's Physical Evaluation at School of Aviation Medicine, Brooks A.F.B., Texas.

They are given a psychiatric interview by O.M.S. Psychiatrist and a 2 to 2½ day assessment and evaluation by Psychologists (Psychological Services) O.M.S.

Aeromedical evaluation is made by HQ's Flight Surgeon, Surgeon General's Office, USAF-cleared liaison Flight Surgeon, Squadron Flight Surgeon.

Initially, twelve (12) candidates' medical charts are screened from which six (6) men are chosen. These six (6) men are than evaluated to obtain two (2) candidates.

It must be realized that original twelve (12) candidates nominated are top-flight, highest quality, highly qualified jet pilots.

The pilots are carefully monitored at all times by the Squadron Flight Surgeon and annually receive astronaut's examination at Lovelace Clinic, New Mexico.

2. All integrees receive a CIA physical initially. All Key personnel also receive psychiatric interview and psychological assessments. It has been noted that a key administrative officer can compromise a program as easily as a pilot.

3. Health and physical standards are maintained with all non-flying personnel receiving 18-months standby physical.

4. Following Powers incident at which time the wives of the pilots were evaluated by the Psychological Staff, it has been the policy to screen the wives of new candidates.

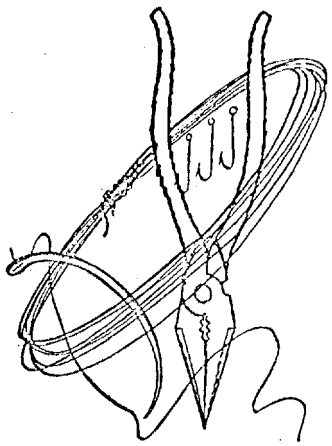
5. Resistance to Interrogation Training

Since the Powers situation an overflight panel was created which, on Directive from 303 Committee and Agency Director, stipulates that all pilots will be trained in interrogation techniques before becoming operationally qualified. Through cooperation of OSA personnel, Psychological Services, Office of Security and TSD, a Program unique to this activity has been developed. It serves as a model for the Intelligence Community. At the time of the Pueblo incidient, you may believe there was considerable attention paid to this Program. It is the policy that no other nationals are given this full program. We believe it should be further utilized for selected operational people. It is very well received by the pilots.

6. The Squadron Flight Surgeon encourages a vigorous conditioning program which is extremely valuable for long flights in small quarters. He also chooses pre-flight and in-flight diets. He establishes requirements for total flying hours, rest intervals between flights, etc. Pilots all receive a short pre-flight and post-flight physical.

Examples of Increased Safety and Reliability in the S1010 PPA

1. Normal/Emergency O_2 delivery to the pilot
2. Pressure protection in the event of cabin pressure loss or ejection.
3. Thermal protection on bailout, water survival, and cold-climate survival.
4. Integrated parachute harness
5. Dual O_2 regulator, controller and hose as well as dual O_2 storage.
6. Integrated flotation garment
7. Fire protection for crash landing and/or cockpit fires.
8. Head and body protection from impact, dragging, or buffeting in flight and after ejection.



MINIMUM ESSENTIAL ITEMS

High quality pocket knife with at least two cutting blades.

Pocket compass.

Match safe with matches.

- Plastic or metallic container.
- Waterproof kitchen-type matches (cushion heads against friction), or
- Waterproof matches rolled in paraffin-soaked muslin in an easily opened container such as small soap box, toothbrush case, etc.

Needles — sailmakers, surgeons, and darning — at least one of each.

Assorted fishhooks in heavy foil, tin, or plastic holders.

Snare wire — small hank.

Needle-nosed pliers with side cutters; high quality.

Bar surgical soap or hand soap containing physohex.

Small fire starter of pyrophoric metal (some plastic match cases have a strip of the metal anchored on the bottom outside of the case).

Personal medicines.

Water purification tablets.

"Bandaids."

Insect repellent stick.

Chapstick.

GOOD TO HAVE ITEMS

*Pen-gun and flares.

*Colored cloth or scarf for signaling.

Stick-type skin dye (for camouflage).

Plastic water bottle.

*Flexible saw (wire saw).

*Sharpening stone.

Safety pins (several sizes).

Travel razor.

Small steel mirror.

6" flat bastard file.

Aluminum foil.

ADDITIONAL SUGGESTIONS

Toothbrush — small type.

Surgical tape.

Prophylactics (make good waterproof containers and/or canteens).

*Penlight with batteries.

Fishline.

*Fishline monofilament.

Code card (Morse code).

Emergency ration can opener (can be taped shut and strung on dog tag chain).

Split shot — for fishing sinkers.

Gill net.

Small, high quality candles.

INDIVIDUAL MEDICAL KIT

Sterile gauze compress bandage.

Anti-biotic ointment (Neomycin polymycin bacitracin opthalmic ointment is good).

Tincture of zephrine — skin antiseptic.

Aspirin tablets.

Salt tablets.

Additional medications may be desirable, depending upon nature of the mission and an individual's particular personal needs.

This should be discussed with and procured from your local flight surgeon.

*Especially valuable.

Personal Survival Kit Items

AERO MEDICAL PROGRAMS

PHYSICS OF THE ATMOSPHERE

Layers and Characteristics -

Pressure -

Temperature -

Gas Laws -

RESPIRATION AND CIRCULATION

Mechanics of Breathing -

Circulation -

Transportation and Utilization of Oxygen -

HYPOXIA

Definition -

Types:

1. Hypoxic Hypoxia -

2. Hypemic Hypoxia -

3. Stagnant Hypoxia -

4. Histotoxic Hypoxia -

Symptoms of Hypoxia -

Times of Useful Consciousness -

HYPERVENTILATION

Definition -

Mechanism of Hyperventilation -

Symptoms -

DYSBARISM

Trapped Gases:

1. Stomach and Intestines -

2. Ear -

3. Sinus -

4. Teeth -

Evolved Gases:

1. Paresthesia -

2. Bends -

3. Chokes -

4. Circulatory and Central Nervous System Disorders -

Factors -

Treatment and Prevention -

PRESSURIZATION

Definition -

Types -

Advantages -

Decompression -

Factors Determining Rate -

Physical Recognition -